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Kristin Hajek

Sex and housework: Does perceived fairness of the distribution of housework actually matter?

Abstract:

Recent findings suggest that couples who perceive their housework distribution to be fair have more frequent sexual encounters and are more satisfied with their sex life. However, past research has relied on between-person comparisons and might therefore be biased due to unobserved confounders. By applying fixed effects panel models, this study seeks to eliminate all time-constant, group-specific heterogeneity. Using data from 1,315 cohabiting and married couples from the German Family Panel (pairfam), I have examined how changes in the distribution of housework and the perception of fairness affect sexual satisfaction and sexual frequency. Moreover, I distinguish between core (traditionally female) and non-core (traditionally male) household tasks to verify the hypothesis that a gender-stereotypic distribution of household tasks fosters sexual activity. No effect of the division of labor or the perception of fairness thereof on sexual satisfaction and sexual frequency could be found.

Key words: housework distribution, fixed effects, pairfam, perceived fairness, sexual frequency, sexual satisfaction

1. Introduction

More often than not, housework is distributed traditionally between men and women in cohabiting relationships (Bianchi et al. 2012). Over the past few decades, men's share of housework has increased, but women still tend to carry most of the workload in the home (Bianchi et al. 2000; Bianchi et al. 2012; Blair/Lichter 1991; Klünder/Meier-Gräwe 2018). Moreover, studies show that partnership characteristics are influenced by the distribution of unpaid family work. For example, if the man's share of housework increases, the woman's partnership satisfaction seems to rise and conflicts occur less often (Amato et al. 2003; Coltrane 2000). The likelihood for second births is also higher if the father participates to a greater degree in housework and child care (Cooke 2004). Therefore, an equal distribution of housework could be beneficial to a partnership. On the other hand, some researchers suggest that it is actually the perceived fairness of the division of labor that influences partnership satisfaction, rather than the actual distribution of household

tasks (Coltrane 2000). If individuals perceive their share of housework to be justified, they appear to be happier with their relationship (Coltrane 2000). However, relatively few studies to date have addressed how exactly housework distribution and the perceived fairness thereof influence a couple's sexual relationship.

Sexual frequency and satisfaction are both important factors in an intimate relationship. Sexuality has been found to be related to marital satisfaction (Smith et al. 2011) as well as union stability (Yabiku/Gager 2009). Therefore, it is important to examine possible influences of housework on a couple's sex life. Since the Kinsey reports (Kinsey et al. 1948), the frequency of sexual intercourse and sexual satisfaction in relationships have received considerable attention in the social sciences. However, due to the lack of longitudinal data, the majority of studies has relied on cross-sectional analyses. Kornrich and colleagues (2013) examined married couples in the United States and found a positive correlation between a gender-stereotypic division of housework and sexual frequency. However, they analyzed decades-old, cross-sectional data and did not take into account the perceived fairness of a couple's housework distribution.

Using data from the German Family Panel (pairfam), a randomly sampled panel survey with focus on partnership and family dynamics, I have examined how changes in the distribution of housework and the perception of fairness affect sexual frequency and sexual satisfaction for cohabiting and married couples from a longitudinal perspective. Johnson and colleagues (2016) also analyzed pairfam data in this regard with autoregressive cross-lagged (ARCL) models. They found an association between men's perceived fairness of housework distribution and a couple's sex life, but no association to the actual distribution of housework. However, Johnson and colleagues did not distinguish between core (traditionally female) and non-core (traditionally male) tasks as suggested by Kornrich et al. (2013), and thus cannot fully refute the findings of Kornrich and colleagues (2013). By categorizing household tasks into traditionally male and female, the following analyses aim to verify the hypothesis that a gender-stereotypic distribution of household tasks stimulates sexual scripts and leads to an increase in sexual intercourse. Further, both studies mentioned above may be biased due to unobserved heterogeneity, with one relying on between-person comparisons and the other not differentiating between and within variation. By applying fixed effects regression models, I can eliminate all couple-specific time-constant heterogeneity and examine whether a change in the division of household labor and/or the perception of fairness thereof actually influences sexual satisfaction and frequency in intimate relationships.

2. Theoretical framework

2.1 *Actual distribution of housework*

Most heterosexual cohabiting couples continue to maintain a traditional division of household tasks. While women tend to carry the majority of the total workload, they spend more time completing core household tasks (e.g., laundry, cooking, cleaning) whereas men focus on more non-core household tasks such as gardening and repairs

(Bianchi et al. 2000; Dechant et al. 2014). Kornrich et al. (2013) suggest that a gender-traditional division of labor stimulates a so-called sexual script which leads to an increased frequency of sexual intercourse. Sexual scripts are formed by culture to define with whom, how, and when individuals should have sex (Simon/Gagnon 1986; Dworkin/O'Sullivan 2007). Through socialization we internalize cultural scripts that define situations as sexual, and together with our own learning experiences, form individualized interpersonal and intrapsychic scripts (McCormick 2010). Teenagers learn traditional sexual scripts in which men initiate sexual encounters and women are mainly portrayed as sexual objects (Kim et al. 2007). Gender differences and gendered behaviors supposedly play a crucial role in heterosexual attraction, and Kornrich et al. (2013) argue that femininity and masculinity are linked to sexual behavior by way of such sexual scripts: The display of gender differences through traditional gender behavior, such as the distribution of housework, fuels internalized sexual scripts which creates sexual attraction and leads to sexual interactions (Kornrich et al. 2013). However, the distribution of housework is only one domain in which couples are able to display gender and consequently stimulate traditional sexual scripts.

One opposing argument is based on exchange theory and does not distinguish between different types of housework. It assumes that neither men nor women enjoy doing housework, although housework traditionally falls into the domain of women (Coltrane 2000). On the other hand, men seem to have a higher desire for sexual intercourse, as they report more intense sexual desires, spontaneous thoughts about sex, and sexual fantasies than do women (Baumeister et al. 2001). Therefore, within this perspective, sex is seen as a female resource which can be exchanged for other goods, including housework (Baumeister/Vohs 2004), which could lead to a positive correlation between men's share of housework and a couple's sexual frequency.

However, it is debatable whether women see sexual interaction as a way to trade in for other goods, implying that there might be another explanation for a positive association between men's participation in housework and a couple's sexual frequency. For example, Amato and colleagues (2003) show that husbands' participation in household tasks is linked to wives' marital happiness. Marital happiness has been shown to be associated with both sexual frequency and sexual satisfaction (Smith et al. 2011). Women that are satisfied with their partnership might therefore engage in more frequent sexual encounters. The more the male partner participates in household tasks, the happier the female counterpart could become with the relationship, and the higher the sexual frequency and satisfaction might be.

2.2 *Perceived fairness of housework distribution*

Most women perform more household tasks than their partners, but only 20 – 30% of women perceive the existing distribution of housework to be unfair (Mikula 1998). A couple with a traditional gender ideology might not perceive an unequal distribution of housework to be unfair. Moreover, a woman that does most of the housework might perceive her share of housework to be fair if her partner works more hours in paid labor and has a higher salary. The distributive justice framework proposed by Thompson (1991) attempts to explain women's sense of fairness in the distribution of household work by tak-

ing the outcome value, comparison referents, and justifications for their behavior into account. For example, a woman might perceive the division of household tasks as fair if she enjoys doing the housework herself, if she compares herself to other women that carry most of the household workload, and/or if she can justify her participation in the housework in another way (Nameda 2013: 34). Perceived inequity is associated with depression and distress (Keith/Schafer 1987), which might be reflected in relationship satisfaction. Therefore, researchers argue that the perception of the fairness of housework division is more influential to relationship satisfaction than the actual distribution (Coltrane 2000). If couples perceive their distribution of housework to be fair, they are happier with their relationship (Frisco/Williams 2003) and thus also with their sex life (Smith et al. 2011). The perception of fairness may indeed be more influential to a couple's sexual satisfaction and frequency than the actual distribution of housework. Based on these considerations, the following analyses will examine both the actual distribution of housework tasks as well as the perception thereof.

3. Previous research

Few previous studies have examined the relationship between the division of household tasks and a couple's sexual intercourse, some of which reporting results from small, non-random samples. Chethik, for example, studied 300 couples in marital therapy and found that if the male partner participates in household tasks, he is more satisfied with his sex life (Chethik 2006; cf. North 2007). Schwartz (1995), however, suggests that more egalitarian couples have less satisfying sex lives. Two studies analyzed data from the National Survey of Families and Households (NSFH): Gager and Yakibu (2010) found that the frequency of sexual intercourse increases with more time spent doing housework for both men and women, although they do not consider the proportion of housework men and women engage in. Kornrich et al. (2013) use the NSFH from 1992 and 1994 to distinguish between non-core (e.g., repairs on the car or in the house) and core housework (e.g., cleaning, laundry). They found that a traditional, gender-based division of household labor goes hand in hand with a higher frequency of sexual intercourse among married couples. However, focusing on married couples only is incomplete, as premarital sex is an ever-increasing phenomenon (Cohen/Manning 2010; Lichter et al. 2010; Yucel/Gassanov 2010). Moreover, as Schröder and Schmiedeberg (2015) have shown, relationship duration, not marital duration, has an influence on sexual frequency. Therefore, it is pivotal to also take unmarried relationships into account. As the division of household tasks and traditional gender beliefs have changed since the 1990s, Carlson et al. (2016) use more recent data to reassess the findings on housework and sexual frequency and satisfaction. They analyzed MARS data from 2006, and found no significant difference in sexual frequency and satisfaction between traditional and egalitarian couples. However, counter-conventional couples (men doing most of the housework) reported lower sexual frequencies and satisfaction than the rest of the sample. On the other hand, an analysis of the National Survey of Midlife in the United States (2004-2006) found lower sexual satisfaction for couples if the female partner performs more housework than their male counterparts and if the household task arrangement is perceived to be unfair (Barrett/Raphael 2018).

However, this only holds for the distributional perspective; the authors do not find any association between sexual satisfaction and reported hours of housework. Moreover, no effect was found for sexual frequency.

One of the main shortcomings in the above-mentioned studies is the use of cross-sectional data. Cross-sectional analyses are not sufficient to examine whether the division of household labor is related to sexual intercourse, as they might be biased due to unobserved differences between couples with a traditional division of labor and more egalitarian couples. The only known longitudinal study has been conducted by Johnson and colleagues (2016) using pairfam data to compute ARCL models in order to examine the effect of the division of housework on a couple's sex life. Controlling for relationship duration, age, the number of children in the household, relationship satisfaction, residence in former East Germany, and self-rated health, they found no relationship between the two, but they did find that male partners who perceive their housework contribution to be fair report higher sexual satisfaction and a higher frequency of intercourse (Johnson et al. 2016). However, the authors only considered core household tasks. Therefore, they cannot fully test whether a gendered division of household tasks may have an effect on a couple's sexual encounters. Most importantly, ARCL models are likely to have estimation biases. These models summarize the cross-lagged association between two constructs across time, but do not dissect between and within-person variation, and are thus not able to appropriately control for unmeasured variables (Pan et al. 2015). Panel data per se do not solve the problem of unobserved heterogeneity, and estimation techniques that rely on between-variation are often biased (Brüderl/ Ludwig 2015). In contrast, fixed effects estimations only consider intra-individual changes over time, and can thus discover whether a change in the division of household labor, or the perception of fairness thereof, within a partnership actually leads to a change in sexual frequency and satisfaction while controlling for time-constant unobserved heterogeneity. Using longitudinal data from the German Family Panel between 2009 and 2015, this study attempts to resolve these issues.

4. Data

4.1. Sample

The German Family Panel pairfam is a nationwide randomly sampled longitudinal study that focuses on partnership and family dynamics in Germany (<http://www.pairfam.de>). Respondents from the birth cohorts 1991-93, 1981-83, and 1971-73 are surveyed annually. The first wave was conducted in 2008 and comprised a sample of over 12,000 focal, or anchor, respondents. Most questions are asked face-to-face by the interviewer (CAPI), but a self-administered module (CASI) is included for more sensitive questions such as those related to sexual behavior. In addition to the panel approach, pairfam implements a multi-actor design, meaning the anchor's partners, parents, and children are interviewed as well. Nonresponse patterns are similar to other panel studies, and bias due to selective attrition does not seem to represent a large issue (Müller/Castiglioni, 2015). A more in-depth description of the study can be found in Huinink et al. (2011).

This analysis is based on data from the anchor and partner surveys of waves 3, 5 and 7, Release 7.0 (Brüderl et. al. 2016).¹ The sample is restricted to married and unmarried cohabiting couples for which both partners took part in the survey and to the birth cohorts 1981-83 and 1971-73, as respondents of the youngest cohort were approximately 16 in the first wave and rarely lived together with their partner. The complete sample consists of 6,268 couple-year observations. Homosexual couples (56 observations) and respondents that have never had sex (2 observations) were excluded. Furthermore, 118 couples who stated that none of the available categories of housework distribution applied to their situation and 211 couples that employ third parties to do all of their housework were eliminated. In addition, 1,643 observations with missing values on the included variables and 8 cases with inconsistent data were excluded.² After restricting the sample to couples that participated in at least two waves (dropping 1,046 observations) the final sample includes 3,192 observations from 1,315 couples.

4.2. Descriptive statistics

A summary of the variables used for these analyses can be found in Table 1. Based on waves 3, 5, and 7, the first column reports the percentage of observations for categorical variables and mean values with standard deviation in brackets for metric variables. The second column indicates the share of respondents in each category in at least one of the three waves (only for categorical variables). The last column shows the percentage of respondents that changed status between waves. For example, over all waves, 80.1% of all observations were married (Column 1). About 84.6% were married in at least one wave (Column 2) and 11.1% of couples changed their marital status between waves (Column 3).

Sexual satisfaction was measured on a scale ranging from 0 (*very unsatisfied*) to 10 (*very satisfied*). The mean satisfaction with sexual intercourse over all waves is 6.3. The frequency of sexual intercourse with the main respondent's reported partner in the last three months was measured on a scale from 1 to 7 (*never/not in the past 3 months, once per month or less, 2-3 times per month, once per week, 2-3 times per week, more than 3 times per week, daily*). In order to apply regression models for count data, these answer categories were recoded to indicate the rounded mid-points of the respective class (frequency of sexual intercourse per month: 0, 1, 3, 4, 10, 20, 30). Over all waves, the mean frequency of sexual intercourse is 4.6, meaning that on average, co-residing couples have sex 4 to 5 times per month. Over 64.6% of couples experienced a change in their sex frequency between waves.

1 The frequency of sexual intercourse was not included in the first wave and the perception of fairness in the distribution of housework was only asked in waves 1, 3, 5 and 7.

2 Observations of those who reported to work over 80 hours a week were excluded.

Table 1: Descriptive statistics (N = 3,192 observations from 1,315 couples)

Variable	Percent/ Mean (SD)	Percent of couples in the category in at least 1 wave	Percent of couples with change between waves
<i>Metric variables:</i>			
Sexual satisfaction ^a	6.3 (2.5)		80.7
Frequency of sexual intercourse per month ^b	4.6 (4.5)		64.6
Distribution of core housework ^c	2.1 (0.7)		65.6
Distribution of non-core housework ^d	4.3 (0.7)		67.2
Health status male partner ^e	3.7 (0.9)		61.0
Health status female partner ^f	3.6 (0.9)		67.0
Male partner's paid working hours	40.9 (13.8)		74.3
Female partner's paid working hours	22.5 (17.1)		74.6
Female partner's age	35.2 (5.6)		100.0
<i>Categorical variables:</i>			
Distribution of household tasks perceived as fair ^g	46.4	64.8	37.4
<i>Relationship duration</i>			
0-1 years	0.4	1.1	1.1
1-2 years	1.5	3.6	3.6
2-3 years	2.3	5.6	5.6
3-5 years	7.0	16.4	16.2
5-7 years	9.3	22.3	22.3
7-10 years	17.5	34.0	31.2
10-13 years	18.2	36.0	33.2
13-16 years	14.8	29.4	27.9
>16 years	29.1	35.4	13.2
Married	80.1	84.6	11.1
<i>Age of youngest child in the household</i>			
No children in household	22.7	27.9	10.0
0-2 years old	17.4	34.9	32.9
2-6 years old	27.9	48.4	40.8
6-13 years old	25.2	36.4	23.4
13-25 years old	6.9	11.0	7.8
<i>Wave</i>			
Wave 3	28.1	68.1	68.1
Wave 5	37.9	92.1	92.1
Wave 7	34.0	82.5	82.5

Notes: ^a Sexual satisfaction: range 0-10. ^b Frequency of sexual intercourse per month: range 0-30. ^c Distribution of core housework: range 1-5. ^d Distribution of non-core housework: range 1-5. ^e Health status male partner: range 1-5. ^f Health status female partner: range 1-5. ^g Distribution of household tasks perceived as fair: 0 = not fair, 1 = fair.

The data set contains one item summarizing the distribution of core housework (laundry, cooking, cleaning) and one concerning non-core housework (repairs in and around the house, car maintenance). The housework variables were measured on a scale from 1 (*my partner does all of the housework*) to 5 (*I do all of the housework*), which have been re-coded so that the value 1 reflects that the female partner does all of the housework; value 2 means that the female partner does most of the housework; value 3 reflects that the couple shares the housework equally; value 4 means that the male partner does most of the housework; and value 5 reflects that he does all of the housework. If the couple employs household help, they were asked to only refer to the portion of work done by the respondent themselves and/or the partner. As individuals tend to overestimate their share of

housework tasks (Coltrane 2000), the female and male statements of housework distribution were averaged per couple (adding both scales and dividing them by two). As expected, most men do the traditionally male tasks and most women engage in traditionally female housework. Less than 1% of men do all of the core housework and less than 1% of women do all of the non-core housework (numbers not in the table). Over 65% of couples change their distribution of core and/or non-core housework between the waves. About 19% of couples agree that couples agree that they share core housework equally and 6% agree to share non-core housework equally (numbers not in the table).

The perceived fairness of housework distribution was also measured proportionally on a scale of 1 to 5 (*I do a lot more than my fair share, I do a bit more than my fair share, I do my fair share, I do a bit less than my fair share, I do a lot less than my fair share*). A dichotomous variable was generated using responses from both partners indicating whether they perceived their distribution of housework to be fair, or if one or both of them perceived it to be in some way unfair. More than half (64.8%) of the couples perceived the distribution of housework in their cohabiting relationship to be fair in at least one wave. Moreover, 37.4% experienced a change of one or both partners' perception of fairness between waves.

Relationship duration, marital status, the age of the youngest child in the household, health status of both partners, both partners' paid working hours, and women's age were included as control variables, as they can influence both sexual satisfaction and frequency as well as the housework distribution. Sexual frequency and satisfaction are expected to decline with relationship duration (Schröder/Schmiedeberg 2015) and age (Call et al. 1995). The distribution of housework is expected to become more traditional with age and an increase in relationship institutionalization (Coltrane 2000). Non-married cohabiting partners should have a less traditional housework distribution and a higher sexual frequency than do married couples (Call et al. 1995). The age of the youngest child in the household (*no children, youngest child 0-2 years, 2-6 years, 6-13 years, 13-25 years old*) should create stronger situational constraints the younger the children, as they demand more care and impose more hindrances on parents (Call et al. 1995). Therefore, a couple's sexual satisfaction and frequency of sexual encounters might decline with young children in the household. Furthermore, women tend to reduce their working hours and increase their time spent doing housework after childbirth (Bianchi et al. 2000). The transition to parenthood and the age of a child also influence women's perception of fairness of housework distribution (Perales et al. 2015). Lower frequency of sexual intercourse and lower sexual satisfaction might also be caused by declining health (Call et al. 1995). Furthermore, health status can influence the amount of housework a person is able to do. Therefore, the health status of both male and female partners was included (*1 = bad, 2 = not so good, 3 = satisfactory, 4 = good, 5 = very good health*). The working hours of both partners have been included in the analysis as well, in order to control for time constraints on a couple's sex life and the time available for household chores (Coltrane 2000). As for paid working hours and health status, responses from both partners were used. Moreover, wave dummies are included in the analysis. As fixed effects models observe individual changes over time, it is not necessary to control for time-constant variables such as religiosity or migration status.

4.3. *Statistical model*

The following analysis specifies linear regression models with cluster-robust standard errors for the dependent variable sexual satisfaction, and Poisson regression models for sexual frequency. Pooled OLS (POLS) as well as random (RE) and fixed effects (FE) models are estimated. POLS models treat the data as cross-sectional and infer the causal effect from between-variation only. RE models (as well as ARCL models) consider personal changes over time, but do not parse within and between-person variation. Between-person variation can be biased by person-specific error (Brüderl/Ludwig 2015), meaning that couples with higher sexual satisfaction and an egalitarian housework distribution could differ from couples with lower sexual satisfaction and a less egalitarian housework distribution on unobserved characteristics. The fixed effects estimator discards between-variation and can therefore not be biased by person-specific, time-invariant characteristics. However, fixed effects models still do not solve the problem of unmeasured time-variant variables (Brüderl/Ludwig 2015). By comparing the POLS and RE results to those from the FE models, I can examine whether a change in the distribution of housework leads to a change in sexual encounters, or if differences in a couple's sexual habits are due to unobserved time-invariant confounding variables.

5. Results

5.1. *Actual distribution of housework*

Table 2 displays the POLS regression, RE, and FE panel models concerning sexual satisfaction. The effects of the distribution of core and non-core housework are rather small and not significant in any model. The same results are visible when sexual frequency is used as dependent variable (see Table A.1 in the appendix). A correlation between the distribution of household tasks and sexual frequency or satisfaction can therefore not be confirmed with these analyses.

5.2. *Perceived fairness of housework distribution*

All models were additionally run with perceived fairness as the independent variable and all control variables as used in the previous analysis. Estimates for sexual satisfaction are displayed in Table 3. If the distribution of housework was perceived as fair by both partners, the sexual satisfaction increased, but only in the POLS and RE models. In the FE model, the effect is substantially smaller and non-significant. The effects on sexual frequency show a similar pattern: the POLS model indicates a significant effect of the perception of fairness of housework distribution on sexual frequency, but not the RE or FE models (Table A.2 in the appendix). A change in the perception of fairness seems not to have an effect on the frequency of sexual intercourse or sexual satisfaction.

5.3. Validity analyses

Missing data may bias the results if item non-response is selective. However, if selectivity occurs due to inter-individual differences regarding respondents' willingness to answer questions, FE models inherently control for this. Observations with missing values for any of the interesting variables were deleted in the data preparation process (1,643 cases), most of which due to missing values for sexual frequency. The mean and standard errors are almost identical for household task distribution and the perception of fairness thereof between couples who did not want to answer the question regarding sexual frequency and the ones who did give valid responses: t-tests find no significant difference between the groups. Therefore, bias due to missing data is expected to be rather small, although cannot be ruled out completely.

Table 2: Summary of pooled OLS (POLS), random (RE), and fixed effects (FE) regression analyses estimating sexual satisfaction

Variable	POLS	RE	FE
Distribution of core housework	0.016	-0.015	-0.087
Distribution of non-core housework	0.143	0.124	0.066
<i>Relationship duration (ref.: more than 16 years)</i>			
0-1 years	1.514*	1.327*	1.028
1-2 years	0.494	0.479	0.247
2-3 years	0.868*	0.588	0.365
3-5 years	0.133	0.117	0.091
5-7 years	0.163	0.170	0.285
7-10 years	0.013	0.015	0.142
10-13 years	-0.011	0.051	0.231
13-16 years	-0.178	-0.022	0.179
Married	0.568***	0.285*	-0.330
<i>Age of youngest child in the household (ref.: no children)</i>			
0-2 years old	-0.535**	-0.655***	-0.935***
2-6 years old	-0.268	-0.350*	-0.641*
6-13 years old	-0.000	-0.027	-0.333
13-25 years old	0.348	0.142	-0.422
Health status male partner	0.269***	0.194***	0.099
Health status female partner	0.249***	0.217***	0.167**
Male partner's paid working hours	-0.001	0.001	0.004
Female partner's paid working hours	-0.001	-0.003	-0.006
Female partner's age	-0.038**	-0.033*	-0.260
<i>Wave (ref.: Wave 3)</i>			
Wave 5	-0.040	-0.073	0.400
Wave 7	-0.174	-0.212*	0.760
N (observations)	3,192	3,192	3,192
N (couples)	1,315	1,315	1,315

Notes: Coefficients from linear regression models. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam waves 3, 5, 7, Release 7.0 (own calculations)

Table 3: Summary of pooled OLS (POLS), random (RE), and fixed effects (FE) regression analyses estimating sexual satisfaction

Variable	POLS	RE	FE
Distribution of household tasks perceived as fair	0.469***	0.271**	0.024
<i>Relationship duration (ref.: more than 16 years)</i>			
0-1 years	1.431*	1.273*	1.012
1-2 years	0.504	0.459	0.237
2-3 years	0.881*	0.602*	0.376
3-5 years	0.121	0.102	0.093
5-7 years	0.134	0.150	0.289
7-10 years	0.000	-0.003	0.144
10-13 years	-0.019	0.042	0.234
13-16 years	-0.167	-0.020	0.179
Married	0.551***	0.285*	-0.333
<i>Age of youngest child in the household (ref.: no children)</i>			
0-2 years old	-0.492**	-0.626***	-0.926***
2-6 years old	-0.209	-0.313*	-0.632*
6-13 years old	0.032	-0.011	-0.332
13-25 years old	0.368	0.158	-0.421
Health status male partner	0.266***	0.195***	0.097
Health status female partner	0.238***	0.215***	0.165**
Male partner's paid working hours	-0.001	0.002	0.004
Female partner's paid working hours	-0.000	-0.003	-0.007
Female partner's age	-0.040**	-0.034*	-0.261
<i>Wave (ref.: Wave 3)</i>			
Wave 5	-0.049	-0.073	0.410
Wave 7	-0.172	-0.208*	0.776
N (observations)	3,192	3,192	3,192
N (couples)	1,315	1,315	1,315

Notes: Coefficients from linear regression models. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam waves 3, 5, 7, Release 7.0 (own calculations)

The distribution of housework chores was measured on a scale from 1 to 5 and treated as a linear variable in the regression analyses. The introduction of quadratic terms for the distribution of housework or treating it as a strictly categorical variable did not produce substantially different results (Table A.3 and A.4 in the appendix). Moreover, using the femlogit ado introduced by Klaus Pforr (2014), multinomial logit fixed effects models that treat the frequency of sexual intercourse as a categorical variable were estimated. Neither the distribution of housework nor the perceived fairness thereof showed any significant effect in these models (see Table A.5 in the appendix). Analyses concerning the actual distribution of housework were able to be run over 6 or even 7 waves.³ The additional information did not lead to fundamental changes in the results (Table A.6 in the appendix). Therefore, for a better comparison, all models presented here are based on the same sample as the model estimating the effect of the perception of fairness of housework distribution (waves 3, 5 and 7). In addition to the variables included by Johnson and colleagues (2016), my analyses also control for marital status and both partners' paid work-

3 The estimation with the frequency of sexual intercourse as the independent variable was able to be run over 6 waves. With sexual satisfaction as the independent variable, 7 waves were available for analysis.

ing hours. Running the analyses with the same control variables as Johnson et al. (2016) and only with core housework constructed analogously to Johnson and colleagues did not produce different results (Table A.7 and A.8 in the appendix). Distinguishing between men's and women's reports of sexual satisfaction and frequency also did not reveal different outcomes (Table A.9-A.12 in the appendix). Results seem to be stable regardless of variable specification and sample composition. Admittedly, it is easier to show that a non-effect is robust against several methodological decisions than a positive or negative effect. However, none of the main coefficients were significant – even at the 10% level.

6. Discussion

6.1. Summary

Using data from the German Family Panel (pairfam), this study investigates the correlation between the distribution of housework and sexual encounters within co-residing relationships. Pooled OLS, random effects, and fixed effects panel regression models found no correlation between the actual distribution of core and non-core housework and the frequency of intercourse or the level of sexual satisfaction. Couples that perceive the household distribution to be fair seem to differ from couples that do not on one or more unobserved variables, which also affects their sexual habits. However, a change in the perception of fairness seems to have no effect on couples' sexual satisfaction or frequency. Therefore, the assumption that the perception of fairness influences relationship satisfaction and that this might influence a couple's sex life cannot be confirmed. Moreover, neither the exchange theory nor sexual scripts theory could be confirmed by this analysis: The hypotheses that women exchange sex for housework or that a gender-traditional division of housework activate sexual scripts and consequently increases the frequency of intercourse and/or sexual satisfaction are not visible in the pairfam data.

In contrast to Kornrich and colleagues (2013), the POLS regression showed no correlation between the distribution of housework and the frequency of intercourse. There are several reasons that might explain these differences. Firstly, Kornrich et al. (2013) used data from 1992-1994 gathered in the United States, whereas these analyses are based on more recent German data. Interestingly, two analyses of U.S. data from 2004 and 2006, respectively, found no differences in sexual frequency between traditional and egalitarian couples (Barrett/Raphael 2018; Carlson et al. 2016). Therefore, the differences to Kornrich et al. (2013) might not stem from cultural differences between countries, but from changing gender attitudes in the United States over the past decades. Secondly, these three studies only analyze cross-sectional data, while pairfam data allows for panel regression models. Longitudinal analyses are better suited for this analysis as changes over time in the distribution of household tasks and its effect on couple's sexual behaviors can be examined. By linking year-by-year changes in the independent variable to the dependent variable, their association can be analyzed more closely and selection effects due to unobserved stable characteristics can be ruled out.

The POLS and RE models here show a correlation between the perception of housework distribution fairness and sexual frequency and satisfaction in accord with the findings of Johnson and colleagues (2016) who also used pairfam data. However, this effect is not visible in the FE regression models. There are three major differences between the analyses of Johnson et al. (2016) and mine. Firstly, control variables differ slightly. Secondly, my analyses also consider the share of non-core household tasks and both partners' indication of household task distribution. Thirdly, Johnson et al. (2016) computed ARCL models, while I conduct fixed effects panel models. As I also run the analyses with the same variables as Johnson et al. (2016) and the results did not change, the different methods must account for the differing results. Longitudinal data analysis does not solve the problem of unobserved heterogeneity, *per se*. ARCL as well as RE regression models consider personal changes over time, but do not distinguish between within and between-variation. By applying FE models, my results are based on a within-person comparison solely, controlling for unobserved time-constant heterogeneity. This hints towards time-stable unobserved confounders which bias the POLS and RE models here as well as the results found by Johnson and colleagues (2016). Less educated couples or couples with more traditional gender roles might have more sexual encounters and engage in more traditional housework distribution. Future research might investigate which factors confound this association.

6.2. *Limitations*

One shortcoming of this analysis is that the questionnaire did not explicitly state that respondents should regard the sexual satisfaction with their reported current partner. However, it was implied, as in the previous question respondents were specifically asked about the sexual frequency with their current partner. Nonetheless, it cannot be ruled out that some answers might be biased if the respondent referred to more than one sexual partner. Furthermore, the housework distribution is collected proportionally on a scale of 1 to 5 in the pairfam study. Admittedly, proportionate questions are not ideal and hourly estimates of time spend on housework or time diaries would produce more accurate results. To account for a possible bias of this rather subjective measurement, the mean value of both partners' statements regarding housework distribution has been considered. However, future studies should seek to replicate these results with hourly measures of time spent completing household tasks. Moreover, the analyses presented are only based on three waves, compared to some extended analyses that included 6 or 7 waves (see appendix). However, the additional information did not lead to different results.

6.3. *Conclusion*

This investigation aimed to better understand the relationship between household task distribution, its perceived fairness, and couples' sexual satisfaction and frequency. Responses from both partners regarding the distribution of housework and the perceived fairness thereof have been considered, and core and non-core household tasks were differentiated in pooled OLS, random effects, and fixed effects panel regressions. The results suggest that changes in the household distribution of chores or in the perceived fairness thereof do not affect a cou-

ple's sexuality in terms of frequency nor satisfaction. In sum, couples needn't worry about negative effects on their sex life when deciding who is going to do the dishes today.

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Appendix

Table A.1: Summary of pooled OLS (POLS), random (RE), and fixed effects (FE) Poisson regression analyses estimating the frequency of sexual intercourse

Variable	POLS	RE	FE
Distribution of core housework	-0.022	-0.044	-0.045
Distribution of non-core housework	0.037	0.005	-0.028
<i>Relationship duration (ref.: more than 16 years)</i>			
0-1 years	0.996***	1.011***	1.125***
1-2 years	0.618***	0.668***	0.767**
2-3 years	0.431***	0.352**	0.448
3-5 years	0.184*	0.117	0.208
5-7 years	0.012	0.024	0.135
7-10 years	0.020	0.005	0.102
10-13 years	0.005	0.013	0.096
13-16 years	-0.089	-0.081	-0.029
Married	0.150*	0.116	0.091
<i>Age of youngest child in the household (ref.: no children)</i>			
0-2 years old	-0.320***	-0.399***	-0.513***
2-6 years old	-0.068	-0.155*	-0.315**
6-13 years old	0.105	-0.022	-0.245*
13-25 years old	0.222**	-0.018	-0.320*
Health status male partner	0.046*	0.041*	0.036
Health status female partner	0.059**	0.056**	0.052**
Male partner's paid working hours	0.001	0.000	0.000
Female partner's paid working hours	-0.000	0.001	0.002
Female partner's age	-0.019***	-0.016**	-0.010
<i>Wave (ref.: Wave 3)</i>			
Wave 5	-0.062	-0.059*	-0.041
Wave 7	-0.105*	-0.096**	-0.061
N (observations)	3,192	3,192	3,126
N (couples)	1,315	1,315	1,286

Notes: Coefficients from Poisson regression models. In the FE model, 29 couples (66 observations) were dropped due to all-zero outcomes. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam waves 3, 5, 7, Release 7.0 (own calculations)

Table A.2: Summary of pooled OLS (POLS), random (RE), and fixed effects (FE) Poisson regression analyses estimating the frequency of sexual intercourse

Variable	POLS	RE	FE
Distribution of household tasks perceived as fair	0.078*	0.015	-0.016
<i>Relationship duration (ref.: more than 16 years)</i>			
0-1 years	0.974***	0.998***	1.120**
1-2 years	0.614***	0.655***	0.750**
2-3 years	0.429***	0.350**	0.437
3-5 years	0.178	0.113	0.201
5-7 years	0.003	0.016	0.125
7-10 years	0.016	0.002	0.095
10-13 years	0.003	0.011	0.091
13-16 years	-0.087	-0.082	-0.034
Married	0.150*	0.117	0.091
<i>Age of youngest child in the household (ref.: no children)</i>			
0-2 years old	-0.306***	-0.394***	-0.512***
2-6 years old	-0.050	-0.146*	-0.312**
6-13 years old	0.118*	-0.014	-0.241*
13-25 years old	0.233**	-0.007	-0.309*
Health status male partner	0.046*	0.040*	0.035
Health status female partner	0.058**	0.055**	0.052**
Male partner's paid working hours	0.001	0.001	0.001
Female partner's paid working hours	-0.000	0.000	0.001
Female partner's age	-0.020***	-0.016**	-0.010
<i>Wave (ref.: Wave 3)</i>			
Wave 5	-0.063	-0.059*	-0.040
Wave 7	-0.105*	-0.095**	-0.059
N (observations)	3,192	3,192	3,126
N (couples)	1,315	1,315	1,286

Notes: Coefficients from Poisson regression models. In the FE model, 29 couples (66 observations) were dropped due to all-zero outcomes. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam waves 3, 5, 7, Release 7.0 (own calculations)

Table A.3: Summary of fixed effects regression analyses estimating frequency of sexual intercourse and sexual satisfaction including a quadratic term of housework distribution

Variable	Frequency of sexual intercourse	Sexual satisfaction
Distribution of core housework	-0.143	0.042
Distribution of core housework squared	0.021	-0.028
Distribution of non-core housework	-0.260	-0.453
Distribution of non-core housework squared	0.029	0.067
N (observations)	3,126	3,192
N (couples)	1,286	1,315

Notes: Coefficients from linear regression model for sexual satisfaction and Poisson regression model for frequency of sexual intercourse. In the latter, 29 couples (66 observations) were dropped due to all-zero outcomes. All models include relationship duration, marital status, age of the youngest child in the household, health status of both partners, paid working hours of both partners, female partner's age, and wave dummies as control variables. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam waves 3, 5, 7, Release 7.0 (own calculations)

Table A.4: Summary of fixed effects regression analyses estimating frequency of sexual intercourse and sexual satisfaction with ordinal variable housework distribution

Variable	Frequency of sexual intercourse	Sexual satisfaction
<i>Distribution of core housework</i> (ref.: housework is distributed equally)		
Female partner does all of the housework	0.089	-0.058
Female partner does most part of the housework	0.014	-0.142
Male partner does most part of the housework	0.071	-0.036
Male partner does all of the housework	-0.120	-1.154
<i>Distribution of non-core housework</i> (ref.: housework is distributed equally)		
Female partner does all of the housework	0.415	-0.204
Female partner does most part of the housework	-0.039	0.173
Male partner does most part of the housework	-0.061	-0.003
Male partner does all of the housework	-0.053	0.134
N (observations)	3,126	3,192
N (couples)	1,286	1,315

Notes: Coefficients from linear regression model for sexual satisfaction and Poisson regression model for frequency of sexual intercourse. In the latter, 29 couples (66 observations) were dropped due to all-zero outcomes. All models include relationship duration, marital status, age of the youngest child in the household, health status of both partners, paid working hours of both partners, female partner's age, and wave dummies as control variables. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam waves 3, 5, 7, Release 7.0 (own calculations)

Table A.5: Summary of multinomial logit fixed effects regression analyses estimating the frequency of sexual intercourse

Variable	Frequency of sexual intercourse	Frequency of sexual intercourse
<i>No sexual intercourse in the last 3 months</i>		
Distribution of core housework	0.471	–
Distribution of non-core housework	-0.161	–
Perceived fairness of distribution of household tasks (<i>ref.: not fair</i>)	–	-0.416
<i>Once a month or less frequently</i>		
Distribution of core housework	0.225	–
Distribution of non-core housework	-0.107	–
Perceived fairness of distribution of household tasks (<i>ref.: not fair</i>)	–	-0.130
<i>Reference: Two or three times a month</i>		
<i>Once a week</i>		
Distribution of core housework	-0.026	–
Distribution of non-core housework	0.056	–
Perceived fairness of distribution of household tasks (<i>ref.: not fair</i>)	–	-0.087
<i>Two or three times a week</i>		
Distribution of core housework	-0.164	–
Distribution of non-core housework	-0.341	–
Perceived fairness of distribution of household tasks (<i>ref.: not fair</i>)	–	-0.099
<i>More than three times a week</i>		
Distribution of core housework	0.090	–
Distribution of non-core housework	-0.511	–
Perceived fairness of distribution of household tasks (<i>ref.: not fair</i>)	–	-0.638
N (observations)	2,129	2,129
N (couples)	848	848

Notes: Coefficients from multinomial logit regression models. 467 couples (1063 observations) were dropped due to all-positive or all-negative outcomes. All models include relationship duration, marital status, age of the youngest child in the household, health status of both partners, paid working hours of both partners, female partner's age, and wave dummies as control variables. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam waves 3, 5, 7, Release 7.0 (own calculations)

Table A.6: Summary of fixed effects regression analyses estimating frequency of sexual intercourse and sexual satisfaction with different sample sizes

Variable	Frequency of sexual intercourse	Sexual satisfaction
Distribution of core housework	-0.014	0.044
Distribution of non-core housework	-0.012	0.067
N (observations)	8,633	11,034
N (couples)	2,237	2,726

Notes: Coefficients from linear regression model for sexual satisfaction and Poisson regression model for frequency of sexual intercourse. In the latter, 44 couples (139 observations) were dropped due to all-zero outcomes. All models include relationship duration, marital status, age of the youngest child in the household, health status of both partners, paid working hours of both partners, female partner's age, and wave dummies as control variables. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam, Release 7.0 (own calculations)

Table A.7: Summary of fixed effects regression analyses estimating frequency of sexual intercourse and sexual satisfaction with same variables as Johnson and colleagues (2016)

Variable	Frequency of sexual intercourse	Sexual satisfaction
Distribution of core housework	-0.068	-0.058
N (observations)	3,155	3,219
N (couples)	1,300	1,328

Notes: Coefficients from linear regression model for sexual satisfaction and Poisson regression model for frequency of sexual intercourse. In the latter, 28 couples (64 observations) were dropped due to all-zero outcomes. All models include relationship duration, age of the youngest child in the household, health status of both partners, female partner's age, relationship satisfaction, residence in former East Germany, and wave dummies as control variables. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam, waves 3, 5, 7, Release 7.0 (own calculations)

Table A.8: Summary of fixed effects regression analyses estimating frequency of sexual intercourse and sexual satisfaction with same variables as Johnson and colleagues (2016)

Variable	Frequency of sexual intercourse	Sexual satisfaction
Distribution of household tasks perceived as fair	-0.028	-0.120
N (observations)	3,155	3,219
N (couples)	1,300	1,328

Notes: Coefficients from linear regression model for sexual satisfaction and Poisson regression model for frequency of sexual intercourse. In the latter, 28 couples (64 observations) were dropped due to all-zero outcomes. All models include relationship duration, age of the youngest child in the household, health status of both partners, female partner's age, relationship satisfaction, residence in former East Germany, and wave dummies as control variables. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam, waves 3, 5, 7, Release 7.0 (own calculations)

Table A.9: Summary of fixed effects regression analyses estimating frequency of sexual intercourse and sexual satisfaction (only female partner's reports)

Variable	Frequency of sexual intercourse	Sexual satisfaction
Distribution of core housework	-0.017	-0.068
Distribution of non-core housework	-0.051	0.003
N (observations)	1,539	1,579
N (couples)	635	652

Notes: Coefficients from linear regression model for sexual satisfaction and Poisson regression model for frequency of sexual intercourse. In the latter, 17 couples (40 observations) were dropped due to all-zero outcomes. All models include relationship duration, marital status, age of the youngest child in the household, health status of both partners, paid working hours of both partners, female partner's age, and wave dummies as control variables. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam waves 3, 5, 7, Release 7.0 (own calculations)

Table A.10: Summary of fixed effects regression analyses estimating frequency of sexual intercourse and sexual satisfaction (only male partner's report)

Variable	Frequency of sexual intercourse	Sexual satisfaction
Distribution of core housework	-0.077	-0.079
Distribution of non-core housework	-0.015	0.094
N (observations)	1,587	1,613
N (couples)	651	663

Notes: Coefficients from linear regression model for sexual satisfaction and Poisson regression model for frequency of sexual intercourse. In the latter, 12 couples (26 observations) were dropped due to all-zero outcomes. All models include relationship duration, marital status, age of the youngest child in the household, health status of both partners, paid working hours of both partners, female partner's age, and wave dummies as control variables. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam waves 3, 5, 7, Release 7.0 (own calculations)

Table A.11: Summary of fixed effects regression analyses estimating frequency of sexual intercourse and sexual satisfaction (only female partner's report)

Variable	Frequency of sexual intercourse	Sexual satisfaction
Distribution of household tasks perceived as fair	-0.047	0.036
N (observations)	1,539	1,579
N (couples)	635	652

Notes: Coefficients from linear regression model for sexual satisfaction and Poisson regression model for frequency of sexual intercourse. In the latter, 17 couples (40 observations) were dropped due to all-zero outcomes. All models include relationship duration, marital status, age of the youngest child in the household, health status of both partners, paid working hours of both partners, female partner's age, and wave dummies as control variables. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam waves 3, 5, 7, Release 7.0 (own calculations)

Table A.12: Summary of fixed effects regression analyses estimating frequency of sexual intercourse and sexual satisfaction (only male partner's report)

Variable	Frequency of sexual intercourse	Sexual satisfaction
Distribution of household tasks perceived as fair	0.017	0.014
N (observations)	1,587	1,613
N (couples)	651	663

Notes: Coefficients from linear regression model for sexual satisfaction and Poisson regression model for frequency of sexual intercourse. In the latter, 12 couples (26 observations) were dropped due to all-zero outcomes. All models include relationship duration, marital status, age of the youngest child in the household, health status of both partners, paid working hours of both partners, female partner's age, and wave dummies as control variables. * $p < .05$, ** $p < .01$, *** $p < .001$

Source: pairfam waves 3, 5, 7, Release 7.0 (own calculations)